

IN THE CLAIMS

1. (Currently Amended) A data processing apparatus for packing digital data that has a various length to blocks each of which has a unit length, comprising:

means for packing data packets each of which has a variable length to a plurality of first blocks from the beginning thereof and packing an overflow portion of a data packet that is larger than the unit length to a blank portion of the first blocks to which a data block that is smaller than the unit length has been packed; and

means for generating a second block that contains a data packet whose length is 0 and the overflow portion;

whereby said overflow portion of said data packet is detected on the basis of length information associated with said data packet.

2. (Original) The data processing apparatus as set forth in claim 1,

wherein the second block has the unit length and contains information that represents that the length is 0 and a portion filled with data of a predetermined value.

3. (Original) The data processing apparatus as set forth in claim 1,

wherein the first blocks and the second block are selectively handled in a common process.

4. (Original) The data processing apparatus as set forth in claim 1,

wherein the second block contains only information that represents that the length is 0.

5. (Original) The data processing apparatus as set forth in claim 4, further comprising:

first memory means having a first area for storing the first blocks and the second block, a second area for storing the overflow portion, and a third area that is different from the first area and the second area;

packing means for packing the overflow portion that is read from the second area of said first memory means to a first block or a second block that is read from the first area of said first memory means and that is smaller than the unit length in such a manner that the overflow portion is fully packed in the unit length of the first block or the second block;

second memory means for storing a block packed in the unit length by said packing means;

outer code encoding means for adding an outer code parity to a block stored in said second memory means and rewriting the resultant block to said second memory; and

means for reading a block to which the outer code parity has been added by said outer code encoding means from said second memory means and writing the block to the third area of said first memory.

6. (Currently Amended) A data processing method for packing digital data that has a various length to blocks each of which has a unit length, comprising the steps of:

packing data packets each of which has a variable length to a plurality of first blocks from the beginning thereof and packing an overflow portion of a data packet that is larger than the unit length to a blank portion of the first blocks to which a data block that is smaller than the unit length has been packed; and

generating a second block that contains a data packet whose length is 0 and the overflow portion;

whereby said overflow portion of said data packet is detected on the basis of length information associated with said data packet.

7. (Currently Amended) A recording apparatus for packing digital data that is input as packets each of which has a variable length to a block having a unit length of an error correction encoding process and encoding the packed block with error correction code that is a product code, comprising:

means for packing data packets each of which has a variable length to a plurality of first blocks from the beginning thereof and packing an overflow portion of a data packet that is larger than the unit length to a blank portion of the first blocks to which a data block that is smaller than the unit length has been packed;

means for generating a second block that contains a data packet whose length is 0 and the overflow portion;

record data forming means for encoding a data block composed of a plurality of first blocks and a plurality of second blocks with error correction code that is a product code, adding a synchronous pattern and an ID to each block having the unit length, and forming record data; and

recording means for recording the record data formed by said record data forming means to a record medium;

whereby said overflow portion of said data packet is detected on the basis of length information associated with said data packet.

8. (Original) The recording apparatus as set forth in claim 7,
wherein the second block has the unit length and contains information that represents that the length is 0 and a portion filled with data of a predetermined value.
9. (Original) The recording apparatus as set forth in claim 7,
wherein the first blocks and the second block are selectively handled in a common process.
10. (Original) The recording apparatus as set forth in claim 7,
wherein the second block contains only information that represents that the length is 0.
11. (Original) The recording apparatus as set forth in claim 10, further comprising:
first memory means having a first area for storing the first blocks and the second block, a second area for storing the overflow portion, and a third area that is different from the first area and the second area;
packing means for packing the overflow portion that is read from the second area of said first memory means to a first block or a second block that is read from the first area of said first memory means and that is smaller than the unit length in such a manner that the overflow portion is fully packed in the unit length of the first block or the second block;
second memory means for storing a block packed in the unit length by said packing means;
outer code encoding means for adding an outer code parity to a block stored in said second memory means and rewriting the resultant block to said second memory; means for

reading a block to which the outer code parity has been added by said outer code encoding means from said second memory means and writing the block to the third area of said first memory; and

inner code encoding means for adding an inner code parity to a block that is read from the third area of said second memory.

12. (Currently Amended) A recording method for packing digital data that is input as packets each of which has a variable length to a block having a unit length of an error correction encoding process and encoding the packed block with error correction code that is a product code, comprising the steps of:

(a) packing data packets each of which has a variable length to a plurality of first blocks from the beginning thereof and packing an overflow portion of a data packet that is larger than the unit length to a blank portion of the first blocks to which a data block that is smaller than the unit length has been packed;

(b) generating a second block that contains a data packet whose length is 0 and the overflow portion;

(c) encoding a data block composed of a plurality of first blocks and a plurality of second blocks with error correction code that is a product code, adding a synchronous pattern and an ID to each block having the unit length, and forming record data; and

(d) recording the record data formed at step (c) to a record medium;

whereby said overflow portion of said data packet is detected on the basis of length information associated with said data packet.